

ABSTRACT OF THE DISCLOSURE**COMPACT OPTICAL TRACKING SYSTEM FOR MAGNETIC TAPE**

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A compact optical tracking system for magnetic tape is disclosed which is independent of the magnetic format and head structure which can generate a position error signal without encoding on the servo track. A plurality of optical servo modules is arranged in a linear array. Each optical servo module contains an optical beam source, preferably a laser, an optical beam interference composite hologram for producing a predetermined pattern on a target and at least one detector for detecting an optical beam reflection. A position correction signal is generated by one or all of the optical servo modules for re-positioning a magnetic head, which reduces the error in the correction signal from tape degradation and dimensional changes. Reference grating may be added to provide further position calibration prior to the tape being positioned over the head. Refinements to the tracking system include outboard heads which are added for additional position references and which may include index marks for initial positioning in association with a desired servo track.

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